Military Uses of 902 to 928 MHz Band

The 902-928 MHz frequency band, also known as the ISM (Industrial, Scientific, and Medical) band, is used for various military applications due to its propagation characteristics, availability of commercial off-the-shelf (COTS) technology, and its ability to support both high-power and low-power communications. Here are some key military uses of this frequency spectrum:

Use Cases

The military leverages the 902-928 MHz band for these and other uses due to its ability to support diverse communication and sensor networks, making it a vital part of their spectrum strategy.

RFID for Logistics and Supply Chain Management

The military uses RFID technology in the 902-928 MHz range for tracking equipment, vehicles, and personnel. This is essential for inventory management and ensuring that supplies reach the correct units in the field. The U.S. Department of Defense (DoD) is a significant user of RFID technology in this band for logistics purposes.

This technology helps with real-time inventory management, ensuring that equipment, vehicles, and supplies are efficiently distributed to the right locations during operations.

The U.S. Army’s logistics operations use passive RFID tags for tracking shipments and equipment through the military supply chain, particularly in large depots and warehouses.

Tactical Radio Communications

Combat Net Radio (CNR) systems often utilize the 902-928 MHz band for secure voice and data communications in field operations. This frequency range provides a balance between range and data throughput, making it useful for short-to-medium-range communication. The use of this frequency supports both line-of-sight and non-line-of-sight communication in diverse terrain conditions.

General Dynamics' radios used in military operations provide encrypted communication channels within this frequency band, ensuring operational security.

Unmanned Aerial Systems (UAS)

Drone Communication: Military drones, particularly smaller ones used for reconnaissance, surveillance, and target acquisition, often use the 902-928 MHz band for control and data transmission. The band allows for reliable communication with ground control stations in both urban and rural environments.

AeroVironment's Puma 3 AE, a small UAS widely used by U.S. Special Forces, uses this band for secure communication.

Electronic Warfare (EW)

The 902-928 MHz band can be employed in electronic warfare for jamming enemy communications and radar systems. Its wide availability and use in commercial systems make it a potential target for electronic countermeasures (ECM).

Military electronic warfare systems can be configured to operate in this band to neutralize threats from adversarial communication devices operating within the same spectrum.

BAE Systems deploys electronic warfare systems that use this frequency band to counter enemy communication systems during conflicts.

Test and Training Ranges

Military training facilities and test ranges utilize this band for various purposes, including tracking systems for live-fire exercises and instrumentation that monitors the performance of vehicles and personnel during training scenarios.

Wireless Sensor Networks (WSNs)

Battlefield Monitoring: Wireless sensors operating in the 902-928 MHz band can be deployed for monitoring environmental conditions, detecting chemical or biological agents, and providing real-time intelligence in combat zones.

Wireless sensor networks deployed on the battlefield is used to gather real-time data on environmental conditions, enemy movements, and other critical information. These sensors can be distributed across a wide area and communicate back to a central command for real-time analysis.

Raytheon uses sensor networks for remote monitoring of chemical, biological, and radiological threats, providing commanders with critical situational awareness.

Vehicle and Equipment Telemetry

Military vehicles and equipment, including aircraft and ground vehicles, use this band for telemetry systems that transmit data about the operational status of the vehicle, such as engine performance and location, back to command centers.

Remote Detonation Systems

Explosive Ordnance Disposal (EOD) teams use remote-controlled systems operating in this frequency range to safely detonate or disable explosives from a distance.

Personal Area Networks (PANs)

Wearable Technologies: Soldiers' wearable devices, including health monitoring systems, communication gear, and navigation aids, sometimes utilize the 902-928 MHz band for creating short-range, personal area networks (PANs).

Remote-Controlled Explosive Ordnance Disposal (EOD)

EOD teams use robots operating in the 902-928 MHz band for remote detonation and safe disposal of explosive devices. These systems rely on secure wireless communication within this frequency range to ensure precise control from a safe distance. The PackBot by iRobot (now owned by Teledyne FLIR) uses this band for remote operations during bomb disposal missions.

Organizations

Several military contractors and companies utilize the 902-928 MHz spectrum for various applications, including communications, UAV systems, and RFID logistics. Here are specific examples of companies in the defense sector that leverage this spectrum:

Lockheed Martin

Unmanned Aerial Systems (UAS): Lockheed Martin uses the 902-928 MHz band for drone communications and control systems in military operations, including its Stalker XE UAS. This frequency range is essential for reliable communication between drones and ground control stations.

Northrop Grumman

RFID and Supply Chain Management: Northrop Grumman uses RFID systems operating in the 902-928 MHz range for tracking military equipment and assets throughout the supply chain. These systems are critical for ensuring that the right equipment reaches the right units in the field.

Raytheon Technologies

Wireless Sensor Networks (WSNs): Raytheon utilizes this spectrum for wireless sensor networks that provide real-time battlefield intelligence, environmental monitoring, and secure communications for troops in combat zones.

BAE Systems

Electronic Warfare (EW): BAE Systems employs the 902-928 MHz band in its electronic warfare systems, including jamming and countermeasures technologies used to disrupt enemy communications and radar systems.

General Dynamics

Tactical Radio Communications: General Dynamics' Combat Net Radio systems, which operate in the 902-928 MHz range, are widely used for secure, tactical communications among military personnel in the field.

L3Harris Technologies

Telemetry and Tracking Systems: L3Harris provides telemetry and tracking systems that use the 902-928 MHz band for monitoring military vehicles, aircraft, and other assets in training and operational environments.

Honeywell Aerospace

Remote Monitoring and Control: Honeywell uses wireless technologies in the 902-928 MHz spectrum for remote monitoring and control of aerospace and defense systems, including UAVs and other automated systems.

Thales Group

Tactical Communications: Thales designs and manufactures communication systems for military forces, including tactical radios that operate within the 902-928 MHz frequency range.

Boeing Defense, Space & Security

UAS and Remote Systems: Boeing utilizes the 902-928 MHz band for communications and control of unmanned aerial systems (UAS) and other defense-related technologies, including some of its advanced drone systems.

Leonardo DRS

RFID and Logistics: Leonardo DRS offers logistics and supply chain management solutions that incorporate RFID technology operating within the 902-928 MHz spectrum, helping the military track assets and inventory in real time.

FLIR Systems

Unmanned Ground Vehicles (UGVs): FLIR Systems, which is known for its thermal imaging and UGV technology, uses the 902-928 MHz band for control and data transmission in unmanned systems designed for reconnaissance and surveillance.

Cobham

Aerospace Communications: Cobham provides secure communication systems for military aircraft and ground systems, some of which use the 902-928 MHz band for critical operations, including data transfer and telemetry.

Kratos Defense & Security Solutions

Electronic Warfare: Kratos specializes in electronic warfare systems and UAVs that use the 902-928 MHz band for communication and jamming capabilities, supporting a variety of military missions.

Textron Systems

Autonomous Vehicles: Textron utilizes the 902-928 MHz band for its autonomous ground vehicles and UAVs, enabling secure communication and remote operation of these systems in military environments.

Sierra Nevada Corporation (SNC)

Communication Systems: SNC develops advanced communication systems for the military, including those operating in the 902-928 MHz range, for secure data links and remote control of unmanned systems.

QinetiQ

Robotics and Autonomous Systems: QinetiQ is involved in the development of robotics and autonomous systems that use the 902-928 MHz frequency for communication and control, particularly in defense and security environments.

SAIC (Science Applications International Corporation)

Tactical Systems Integration: SAIC provides integrated solutions for the military, including tactical communication systems that operate within the 902-928 MHz band for reliable, secure communication in field operations.

Mercury Systems

Electronic Warfare and Radar: Mercury Systems is involved in the design of electronic warfare systems and radar that may use portions of the 902-928 MHz band for detecting and countering threats.

CACI International

RFID and IoT Solutions: CACI provides RFID-based logistics and IoT solutions for military supply chains that utilize the 902-928 MHz spectrum, helping track equipment and supplies in real-time.

ManTech International

UAV Systems and Cybersecurity: ManTech develops UAV systems that communicate over the 902-928 MHz band and offers cybersecurity services to protect these communications from potential threats.

Elbit Systems

Tactical Communications: Elbit Systems offers a range of military communication solutions, including tactical radios and networked communication systems that operate within the 902-928 MHz band.

Oshkosh Defense

Autonomous Vehicle Systems: Oshkosh Defense develops and manufactures military vehicles, including unmanned and autonomous ground vehicles, that utilize the 902-928 MHz band for remote operation and telemetry.

AeroVironment

Unmanned Aircraft Systems (UAS): AeroVironment specializes in small drones and UAVs that use the 902-928 MHz frequency for command, control, and communication, especially in tactical military operations.

Curtiss-Wright Defense Solutions

Data Acquisition and Communications: Curtiss-Wright provides mission-critical electronic systems, including data acquisition and communication systems that operate in the 902-928 MHz band, used in a variety of military applications such as telemetry and UAV control.